EE200

1st Midterm Exam, Fall 2016, Time: 1:30 hr

Note: ***Show all steps of your solution. Any direct result will not be considered.***

Q1: In the circuit of Fig.1, R1=200Ω , R2=0.2k Ω and R3= 1k Ω;

a- Convert E1 to current source and redraw a simplified circuit, then find:

b- the total resistance R_T and I_T of the simplified circuit

c- the current I3 using current divider rule

d- the voltages V2, V_{ba} and V_{ab}

e- the dissipated power (P2) in the resistor R2

(7 points)

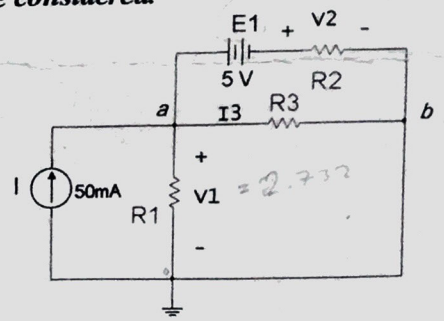


Fig 1

Q2: Using the Mesh Analysis – Method, find the voltage Vo in the circuit shown in Fig.2

(6 points)

Note: all resistance values in ohms

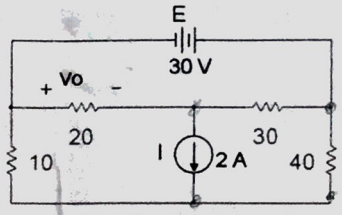


Fig 2

Q3. For the circuit shown in Fig. 3,

a- How many nodes and branches do you have in the circuit? What should be the value of the current source I ?

b- Using branch-current analysis (assign currents for the unknown branches with the use of Kirchhoff 's voltage and current laws), and assume $R = 4\ \Omega$, find voltages V_a , V_b , and V_{ba} .

c- Use the same above method to find the value of resistance R when we have $V_a = V_b$.

d- Based on your results of part (c), determine the total power delivered by all supplies

(7 points)

Note: all resistance values in ohms

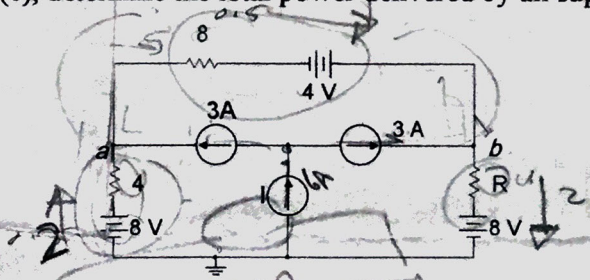


Fig 3

6/11/2016

University of Tripoli / Faculty of Engineering
Electrical Engineering Department
EE200 Electric Circuit I *Test #1* *Time 60 minutes*

Name	نور الدين حمود الغيلي	St.#	Mark
		List No.	

الاجابة النموذجية

Question	Maximum mark	St. Mark
1	5	
2	5	
3	10	
Total Mark		

$I_D = 3.0\,mA,\ V_G = 0,\ V_{DS} = 6V$

$R_{T1} = 19.4\,\Omega$
$R_{T2} = 7.0\,\Omega$

$V_a = V_{ab} = -13.1\,V$
$P = 46.25$ watt.

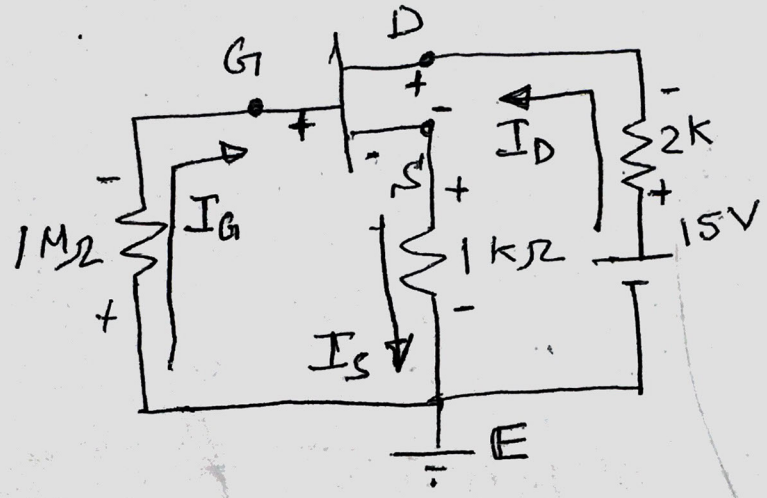
Date . 30/03/2016

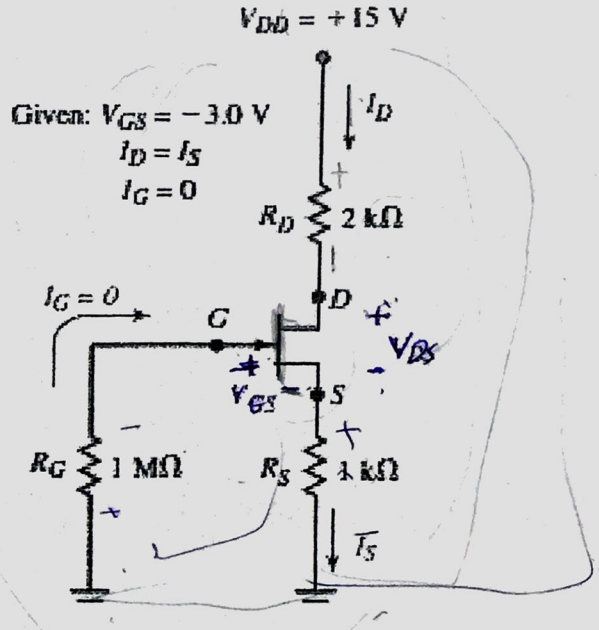
Nuraddin M GIALI

rsity of Tripoli / Faculty of Engineering
ctrical Engineering Department
E200 Electric Circuit I *Test #1* *Time 60 minutes*

Name	نور العرفي الليالي	St.#	/5

1. Find V_{DS}, I_D, and V_G. FIG(1). **(5 Marks)**





Loop DESD

$-I_D(2) + 15 - I_S(1) - V_{DS} = 0$ $\quad I_D = I_S$

$15 - 3I_D = V_{DS}$ ——①

Loop SEGS

$I_S(1) + I_G(1000) + V_{GS} = 0$ $\quad I_G = 0$

$V_{GS} = -I_S$ ⟹

$15 - 3(3) = V_{DS}$ ⟹

$I_S = 3.0$ mA

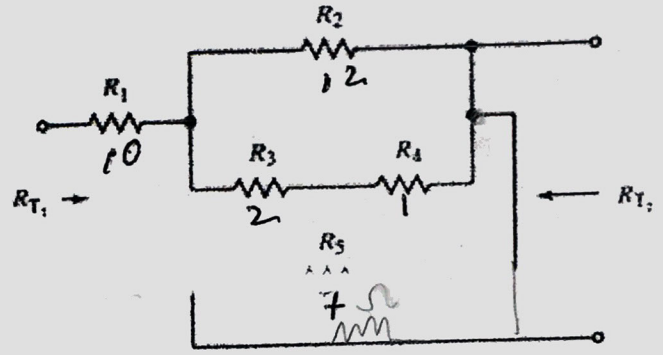
$V_{DS} = 6$ V

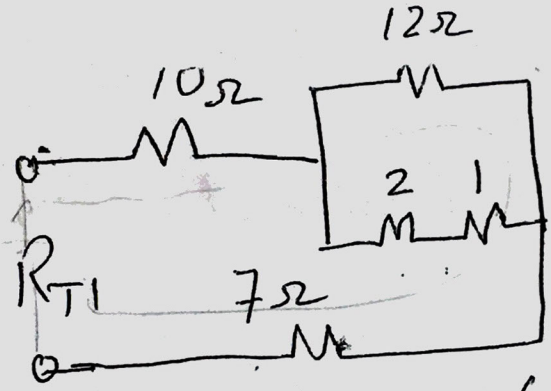
$V_G = 0$

versity of Tripoli / Faculty of Engineering
lectrical Engineering Department
EE200 Electric Circuit I *Test #1* *Time 60 minutes*

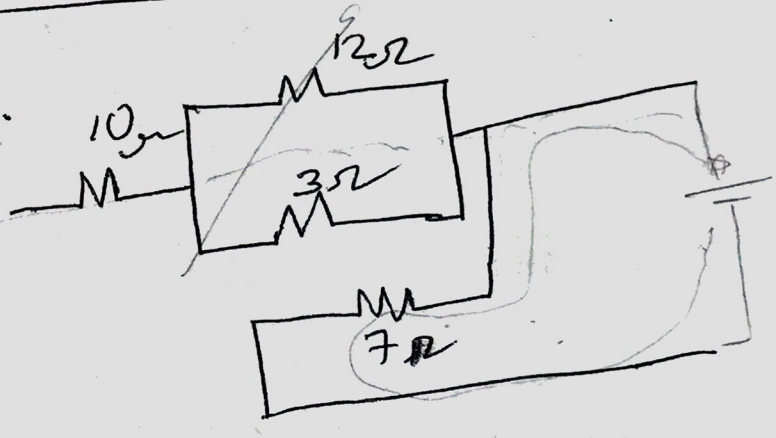
Name		St.#	/5

2. **If R_1=10 Ω, R_2= 12 Ω, R_3=2 Ω, R_4= 1Ω, and R5=7 Ω. Find the total resistance R_{T1} and R_{T2}.** (5 Marks)





$$R_{T1} = 17 + \left(\frac{3 \times 12}{15}\right) = 19.4\,\Omega$$



$$R_{T2} = 7\,\Omega$$

University of Tripoli / Faculty of Engineering
Electrical Engineering Department
EE200 Electric Circuit I Test #1 Time 60 minutes

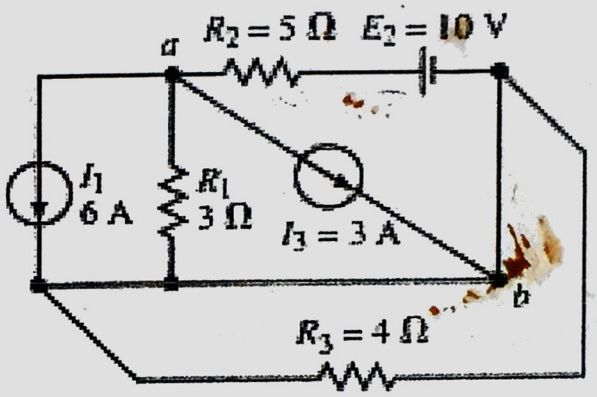
Name	نور الدين محمود الكاك	St.#	/ 10

3. Write down the nodal equations for the circuit. (4 marks).

And then find

a. The voltage V_{ab}. **(3 Marks).**

b. The power for the voltage source. **(3 Marks).**



$$6 + \frac{V_a}{3} + 3 + \frac{V_a - 10}{5} = 0$$

$$V_a = -13.1 \text{ V}$$

$$V_{ab} = V_a = -13.1 \text{ V}.$$

The power of voltage source.

$$P = E_2 I_2 = 10(4.625) = 46.25 \text{ Watt}$$

$$I_2 = \frac{(13.125 + 10)}{5} \times 10 = 46.25 \text{ watt}$$

EE200

2st Midterm Exam, Fall 2016, Time: 1:30 hr

Note: ***Show all steps of your solution. Any direct result will not be considered.***

Q1: In the circuit of Fig.1, R1= R2= R3= 5 Ω and R4= 15 Ω; With RL= 6 Ω;

(a) Use Norton Analysis to determine I_L .

(b) What is the value of R_L for maximum power transfer? Calculate P_{MAX}.

(c) Convert the voltage source. Also, convert the (Y) between points (a,b,c) to (Δ). Re-draw the equivalent circuit and combine any parallel resistors.

(d) With RL= 6 Ω, use Nodal analysis to calculate I_L

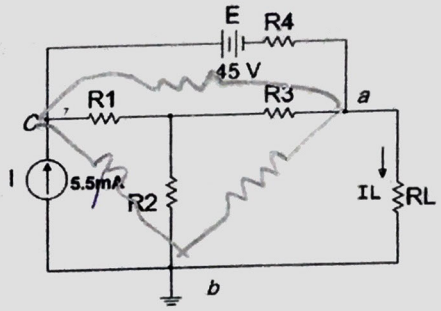


Fig 1

Q2: For the network shown in Fig. 2, assume the capacitor in the circuit is an ideal and given $R_1 = 10\ k\Omega$, $R_2 = 8\ k\Omega$, $R_3 = 30\ k\Omega$, $R_4 = 20\ k\Omega$, $R_5 = 4\ k\Omega$, $R_6 = 10\ k\Omega$, $R_7 = 5\ k\Omega$, $R_8 = 10\ k\Omega$, $R_9 = 10\ k\Omega$, and $C = 100\ \mu F$.

(a) If the switch has been in position 3 for long time (more than an hour) and at t=0 the switch moves to position 1, find mathematical expressions for i_C , v_C , and v_{R_1}.

(b) After 5 seconds, the switch moves to the position 2 and stays there for 10 seconds, then moves to the position 3 again. Find i_C and v_C for $t \geq 15$ seconds.

(c) At t=17 seconds, the switch moves from position 3 to position 4. Determine i_C and v_C in this case.

(d) When t=22 seconds, the switch moves to position 5. Calculate dissipated power in R_3 during the period $0 \leq t \leq 30\ seconds$. What is the value of stored energy in the capacitor when $17 \leq t \leq 22\ seconds$.

(e) Draw i_C and v_C for $0 \leq t \leq 40\ seconds$.

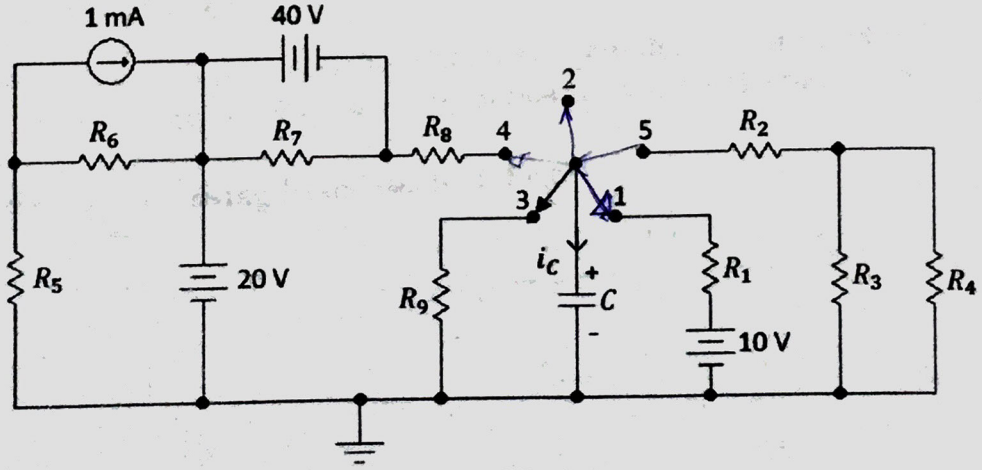


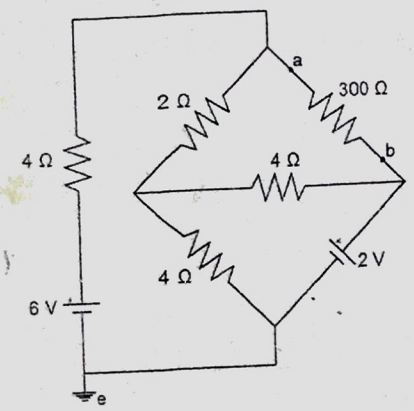
Fig. 2

ELECTRICA L AND ELECTRONIC ENGINEERING DEPT.
EE200 Fundamentals of Electrical Engineering

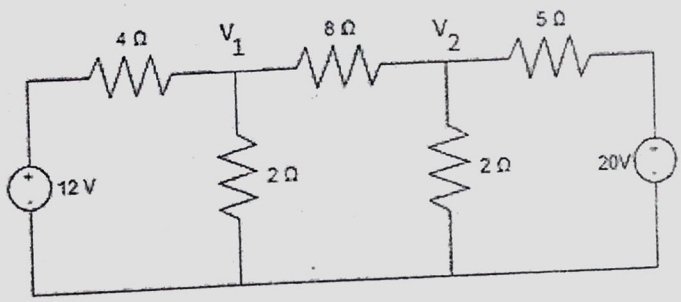
Make Up Exam. Mark (20) Time 1 Hour

1. **For the network of Fig(1), find the Thevenin equivalent circuit. Find also the value of the resistance to draw maximum power, what is the value of that power?**

2. **Determine v_1 , v_2 using Nodal method. Fig(2)**



Fig(1)



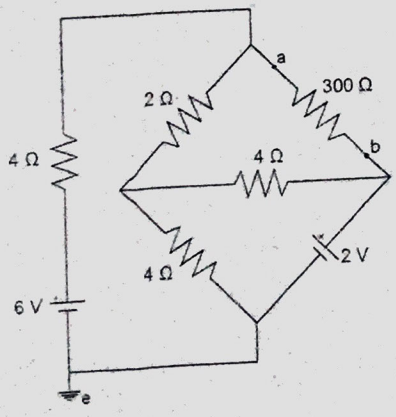
Fig(2)

ELECTRICA L AND ELECTRONIC ENGINEERING DEPT.
EE200 Fundamentals of Electrical Engineering

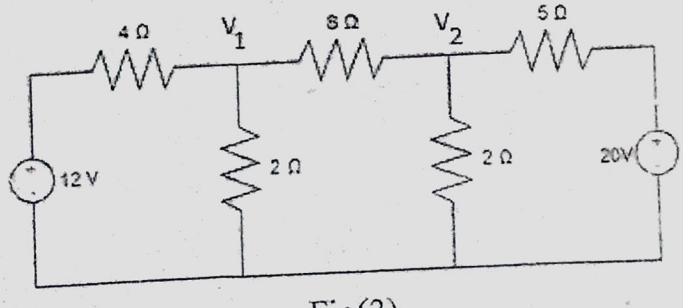
Make Up Exam. Mark (20) Time 1 Hour

1. **For the network of Fig(1), find the Thevenin equivalent circuit. Find also the value of the resistance to draw maximum power, what is the value of that power?**

2. **Determine v_1 , v_2 using Nodal method. Fig(2)**



Fig(1)



Fig(2)

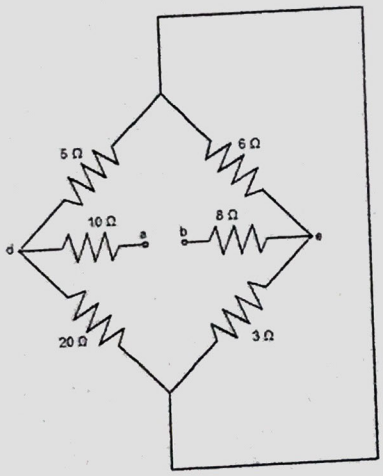
TRICA L AND ELECTRONIC ENGINEERING DEPT.

E200 Fundamentals of Electrical Engineering

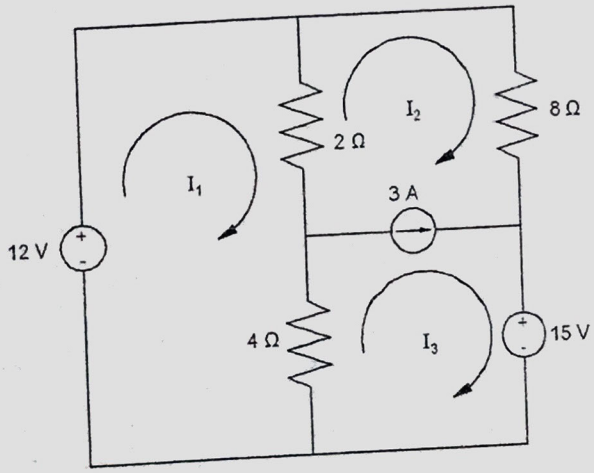
Final Exam Time : 150 Minutes Mark: 40 Date:

Attempt All Question below

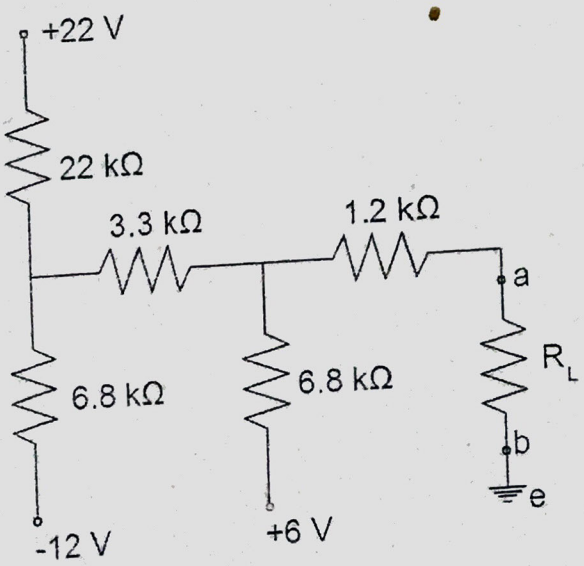
1. Find the equivalent resistance R_{ab} in the circuit of Fig.(1).
2. Using the mesh analysis writ the loop current equations for the circuit in Fig (2) find the current in each branch.
3. For the network of Fig(3), find the Norton equivalent circuit
4. Design the network of Fig(4) such that the system will turn on 10 s after the switch is closed.



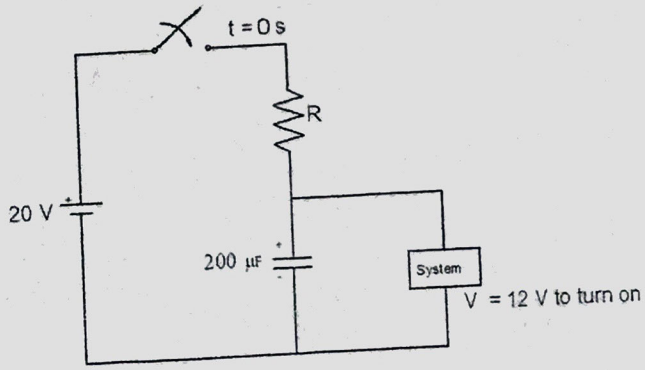
Fig(1)



Fig(2)



Fig(3)



Fig(4)

بسم الله الرحمن الرحيم

توكلت على الله

Electrical and Electronics Engineering Department

Course Code: EE280 Final Exam: 50%. Spring 2016 Date: 22/06/2016 Time: 120 min

Answer the following questions:

Q.1): **a)** Find the currents I_o and I_g for the network of figure 1.

b) Use Thevenin's theorem to find the current (I_L) that follows into the 5kΩ-resistor for the circuit of figure 2.

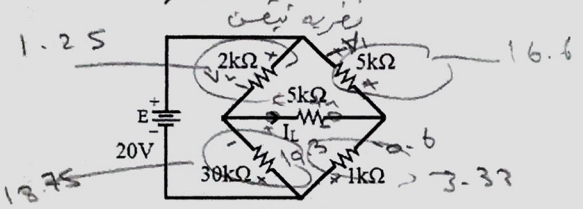


Figure 2

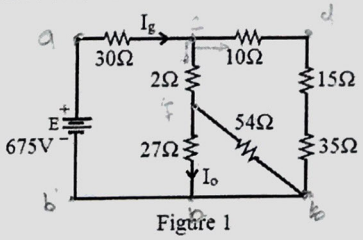


Figure 1

Q.2): **a)** For circuit shown in figure3,

i) Write the mathematical expressions for i_L, v_L, and V_{R2} for five time constant of storage phase.

ii) Write the mathematical expressions for i_L, v_L, and V_{R2}, if the switch is opened after five time constant of storage phase.

iii) Sketch the waveforms of i_L, v_L, and V_{R2} for both phases in (i) and (ii).

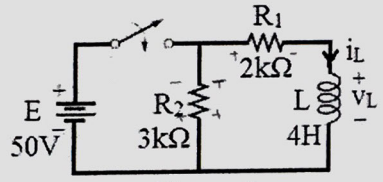


Figure 3

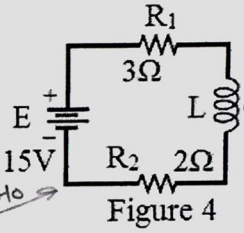


Figure 4

b) Find the energy stored by the inductor in circuit of figure 4 when the current through it has reached its final value.

Q.3): For the circuit of figure 5, the steady state values are:- $I_L = 2$ A and $V_C = 20$ V, find the values of E_1 and E_2.

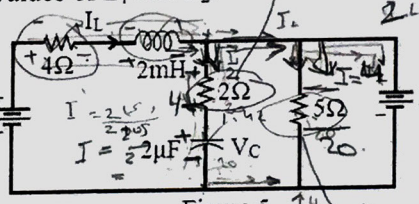


Figure 5

Q.4): For the following pairs of voltages and currents,

i) Determine whether the element involved is a capacitor, an inductor, or a resistor, and determine the value of *C, L,* or *R* if sufficient data are provided.

ii) Find the frequency, r. m. s. values of voltages and currents and the Periodic time for each of the circuits.

a) $v = 30 \sin(314t + 30)$
$i = 20 \cos(314t - 60)$

b) $v = 40 \sin(377t - 50)$
$i = 20 \sin(377t + 40)$

c) $v = -50 \sin(100t - 30)$
$i = 20 \cos(100t - 30)$

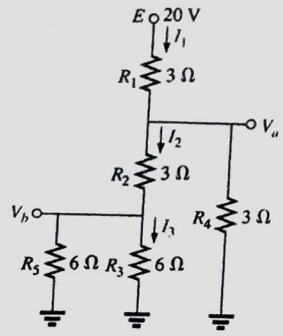
GOOD LUCK

EEE

University of Tripoli- Faculty of Engineering, Dept of E&EE

EE200 Final exam-Fall 2016- Time **120 min**

Question No. 1 (20 Marks)



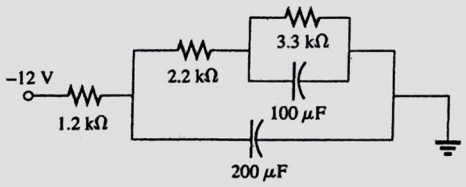
i. a- For the shown network determine the current I_1.

b- Calculate the currents I_2 and I_3.

c- Determine the voltage levels V_a and V_b.

d- Determine the total power dissipated in this network.

ii. For the network below determine the energy stored by each capacitor under steady state conditions.

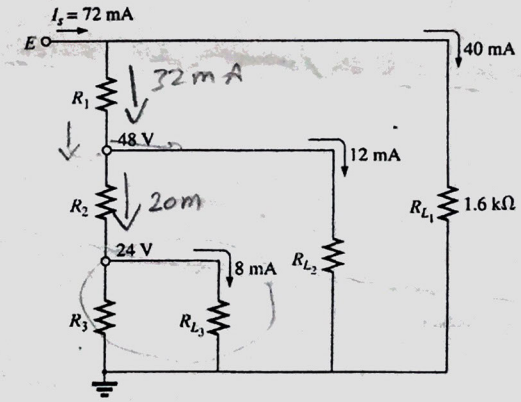


iii. Given the voltage divider supply

a- Determine the supply voltage E.

b- Find the load resistors R_{L2} and R_{L3}.

c- Determine the voltage divider resistors R_1, R_2, and R_3.



iv. For the electromagnet shown below;

a- Find the flux density in Wb/meter squared.

b- What is the flux density in teslas?

c- What is the applied electromotive force?

d- If the length of the electromagnet is .2 m find H the magnetizing force.

Electrical and Electronics Engineering Department

Course Code: EE280 First Exam: 20%. Spring 2016 Date: 06/04/2016 Time: 75 min

Note: write your name, your student No, department and your group اكتب اسمك – رقم القيد – القسم – المجموعة

: write steps of solution, any direct result will not be considered. اكتب خطوات الحل و اى اجابة مباشرة لن تصحح

: Any multiple answers will not be considered. فى حالة وجود اكثر من اجابة لن تصحح

الاسم: مجاهد على محمد عبود القسم: النووية

المجموعة: C 02213503

Answer the following questions:

Q.1): a- An electrical system converts 500 kWh of electrical energy into heat during 10 h. what is the power level of the system?

b- For the network of figure 1 find: R_T, I_1, I_2, V_{ab}, and P_{R4}.

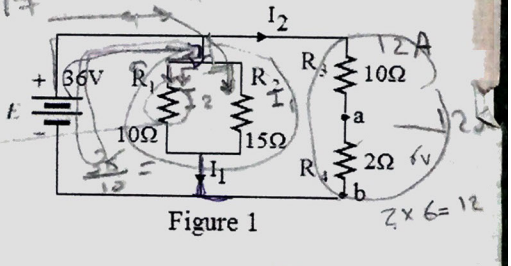


Figure 1

Q.2): For the electric circuit shown in figure2, convert the current source to voltage source, then, use ***mesh analysis*** to calculate the current through 10Ω resistor.

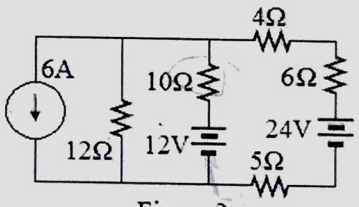


Figure 2

Q.3): For the network of figure3, find the voltage across the 1kΩ resistor using the superposition's theorem?

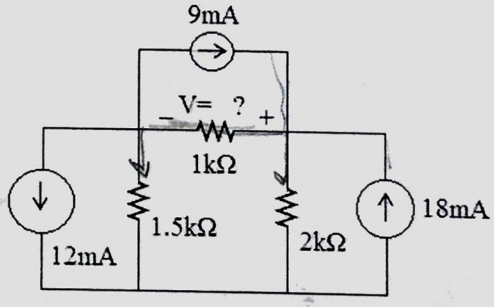


Figure 3

Q.4): Use Thevenin's Theorem to calculate the value and the direction of the current (I) in the circuit of figure 4.

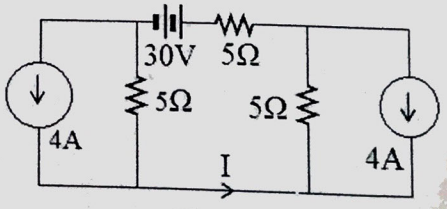


Figure 4

Electrical and Electronic Eng. Dept.

EE280, 1st Midterm Exam, Spring 2014, Time: 1:30 hr

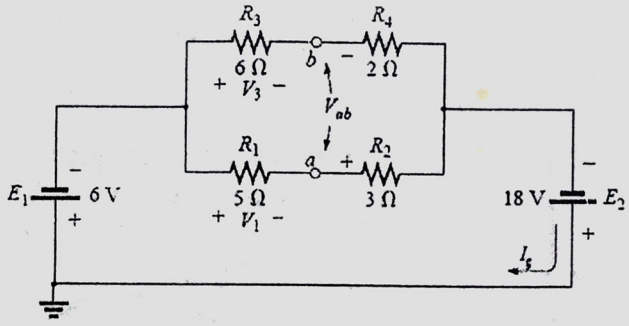
Answer the following questions

Q.1 a) Find the voltages V_1, V_3, and V_{ab} for the following network (3 marks)

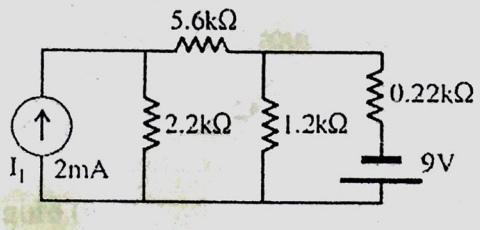
b) Calculate the source current I_s and R_T? (2 marks)

c) Determine the power delivered by the source, and compare it to the total power dissipated by the resistive elements. (2 marks)

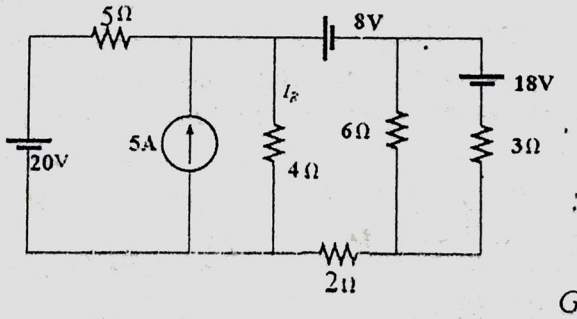
d) Assume that R_1 is shorted out and R_4 is open circuit, what are the current values passes through the remaining resistors. (3 marks)



Q.2 Use mesh analysis to find the current through the 9 V voltage source in the circuit shown below after you convert current source to voltage source. (8 marks)



Q.3 For the following circuit, find the current in the 4-Ω resistor using Superposition Theorem (7 marks).



Good luck for all

تشذك عماد الدين إبراهيم الوفاتي

ALFATAH UNIVERSITY
FACULTY OF ENGINEERING
Electrical & Electronics Engineering Department
EE200

First Exam

Spring 2011

الزمن ساعة وربع

Q1- For the circuit of Fig.1, determine V_a and V_b.

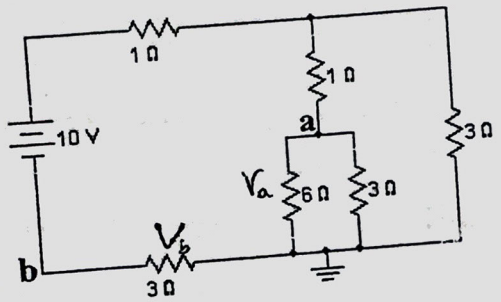


Fig.1

Q2- Using Mesh analyses determine the current in the 4-KΩ resistor.

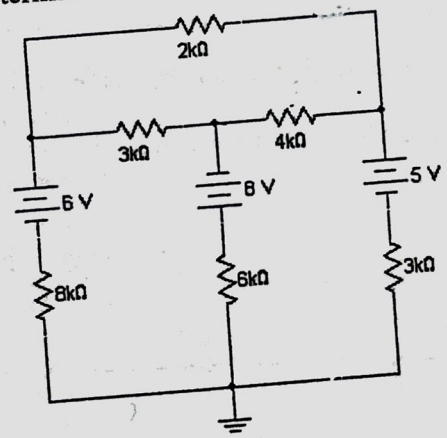


Fig.2

Q3- Using Nodal analyses determine the voltage at each node in the circuit of Fig. 3.

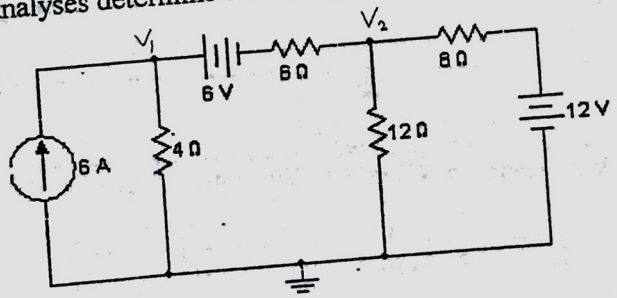


Fig.3

تمنياتنا للجميع بالتوفيق

شذى عماد الدين إبراهيم الويفاتي

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الزمن ساعة وربع

Q1- Determine the current through the 4Ω-resistor in the circuit of Fig.1 using Norton theorem.

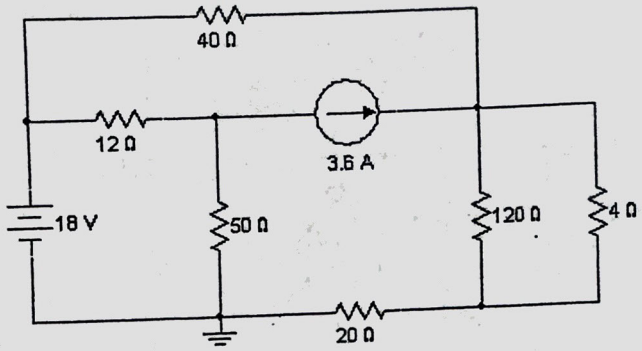

Fig.1

Q2- For the circuit of Fig. 2: v_c, i_c

a) If the switch is closed at t=0 s, write the mathematical expressions for the voltage and the current of the capacitor.

b) If the switch is opened at t= 2 ms, write the mathematical expressions for voltage and the current of the capacitor. v_c, i_c

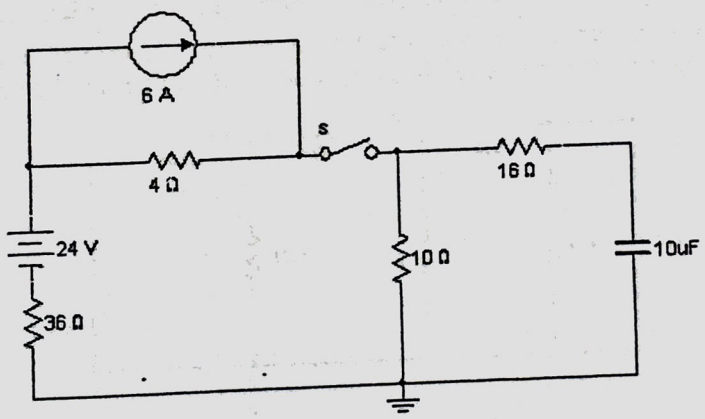

Fig.2

Q3- For the circuit of Fig.3, determine the **voltage across** and the **charge on** each capacitor. V, Q ع كل مكثف

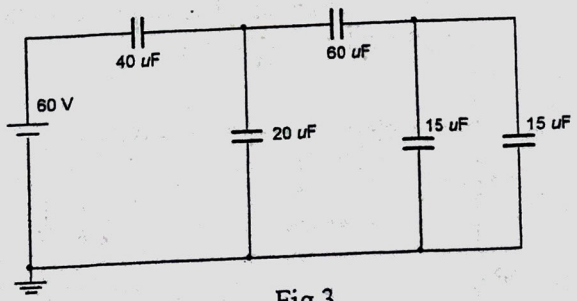

Fig.3

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الزمن ساعتان و ربع | 1/2

Q1- Determine the current through 3Ω resistor in Fig.1 using:
1- Mesh analysis. (5 marks)
2- Nodal analysis. (5 marks)

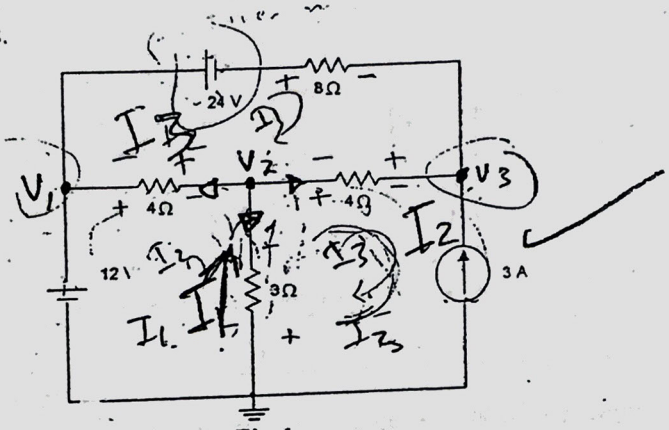

Fig.1

Q2-a) Write the mathematical expressions for the current i_L and the voltage v_L following the closing of the switch.

If the switch is opened at t= 100 ms:

b) Write the mathematical expressions for the current i_L and the voltage v_L.
c) Calculate the energy stored in the inductor after 1 τ of the decaying cycle.
d) Determine the time in which the voltage of 3Ω-resistor drops to 1 volt.

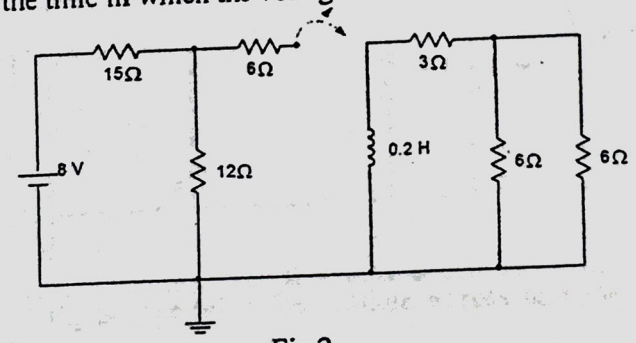

Fig.2 (10 marks)

Q3- If each inductor and capacitor has reached its final value: (10 marks)
1) Determine the energy stored in each capacitor and inductor.
2) Determine the dissipated power by each resistor in the circuit.

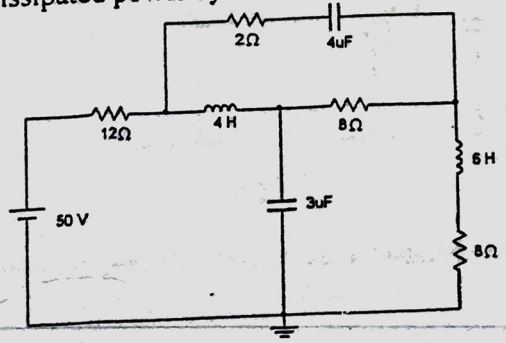

Fig.3

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الزمن ساعة ونصف

Q1- Determine the current through the 30Ω-resistor in the circuit of Fig.1 using:

1- Thevenin theorem. (5 marks)

2- Norton theorem. (5 marks)

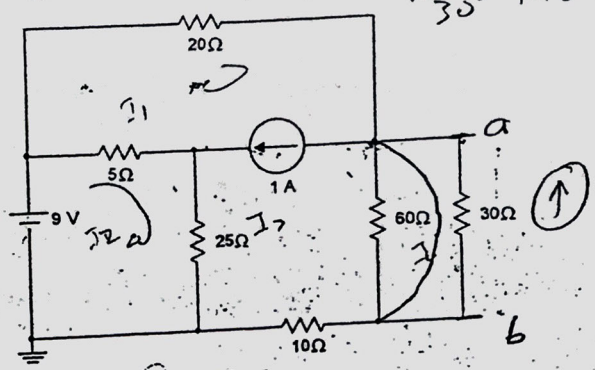

Fig.1

Q2- For the circuit of Fig. 2:

a) Write the mathematical expressions for the voltage across 60 uF-capacitor and the current through it after the switch is thrown into position 1.

b) If the switch is thrown into position 2 at t= 500 ms. Write the mathematical expressions for the voltage across 60 uF-capacitor and the current through it.

c) Determine the energy stored in each capacitor after 1 τ of the discharging phase.

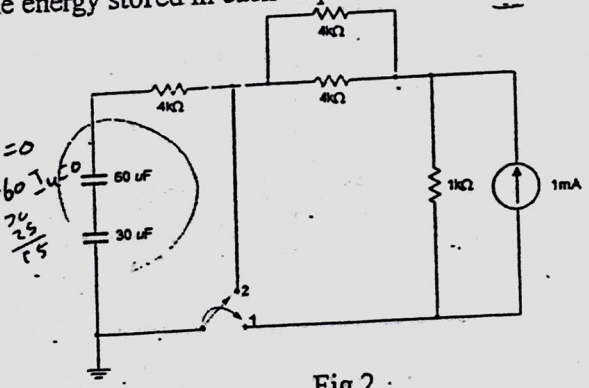

Fig.2 (5 marks)

Q3- For the circuit of Fig.3, determine the **voltage across** and the **charge on** each capacitor.

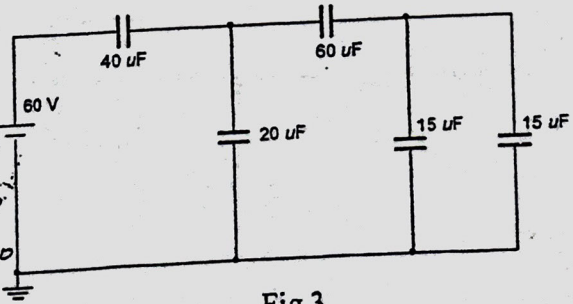

Fig.3 (5 marks)

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الزمن ساعتان | 1/2

Q1- Determine the voltage of the 35Ω-resistor.

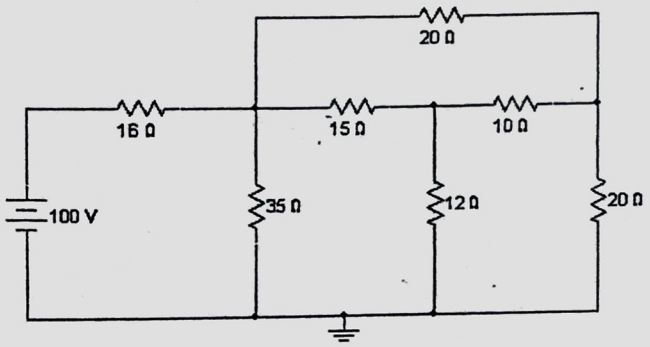

Fig.1 (10 marks)

Q2-a) Write the mathematical expressions for the current i_L and the voltage v_L following the closing of the switch.

If the switch is opened at $t = 2\tau$ of the storage cycle:

b) Write the mathematical expressions for the current i_L and the voltage v_L.

c) Calculate the energy stored in the inductor after 1τ of the decaying cycle.

d) Determine the time in which the voltage of 2kΩ-resistor drops to zero volt.

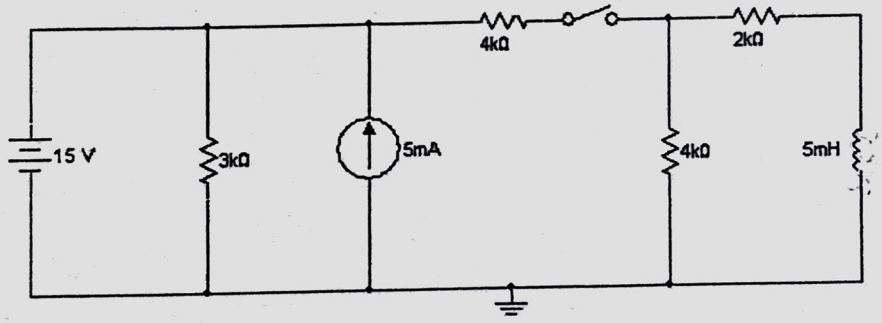

Fig.2 (10 marks)

Q3- If each inductor and capacitor has reached its final value, determine the energy stored in each of them. (10 marks)

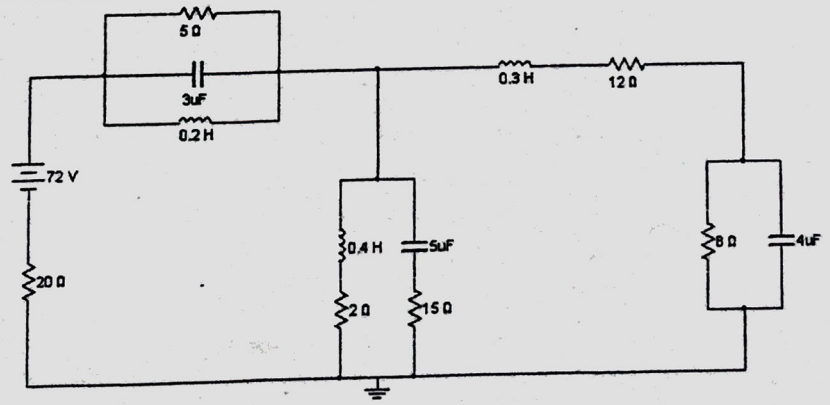

Fig.3